INDIAN SEAFOODS

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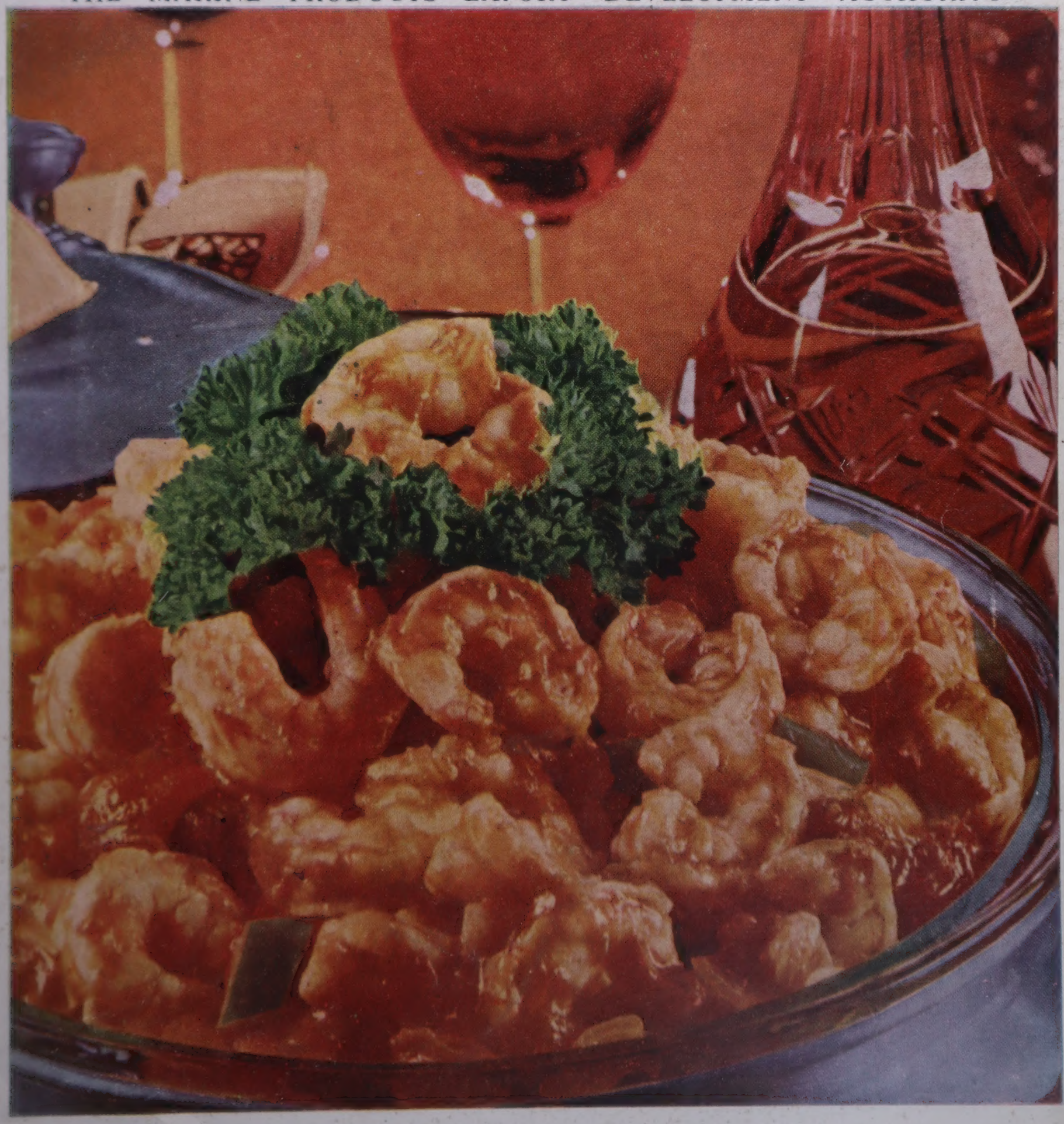
June 1978

THE MARINE PRODUCTS EXPORT DEVELOPMENT AUTHORITY



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INDIAN SEAFOODS

Vol. XIII Nos. 2 & 3
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ON THE COVER

Mmmmm...mouthwatering, isn't it?

Everywhere in the world, accomplished chefs and imaginative housewives are creating exciting dishes with Indian shrimp. So delectable and varied, Indian shrimp offers great scope for inventive cooking. And once you begin experimenting with it, the variations are virtually endless.

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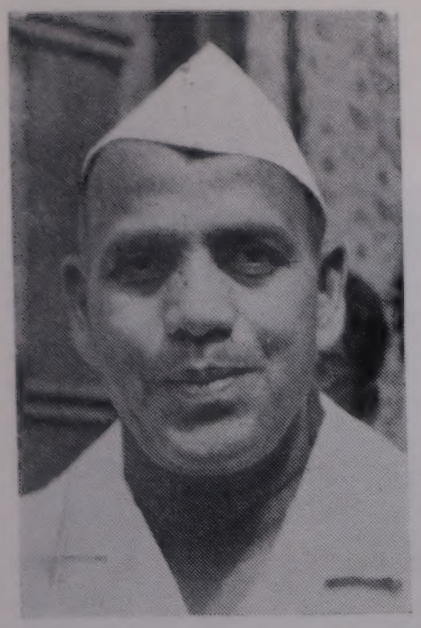


A POSITIVE NEW ORIENTATION TO EXPORT TRADE

(Full text of a write-up circulated on the occasion of the inauguration of the new building of the Seafood Exporters' Association of India, at Cochin on 24th March, 1978 by Mr. Mohan Dharia, Union Minister of Commerce, Civil Supplies and Co-operation.)

It gives me immense pleasure to be present at the inauguration of the new building of the Association of Seafood Exporters. Marine Products are one of the most important foreign exchange earners for our country. Seafood exports, which were of the value of Rs. 4 crores in 1965-66, have been increasing year by year and reached an all-time high of Rs. 189 crores during 1976-77 and the current year is expected to end up with exports of the value of Rs. 190 to 200 crores. I am confident that by the year 1982-83, with sustained efforts, it will be possible for us to increase the export of marine products to over Rs. 500 crores.

At present we are exploiting only a fraction of our total marine resources. I foresee a very big expansion of this industry. With the declaration of 200 mile economic zone, there is urgent need for expanding our fishing efforts. Government has recently allowed import of 109 deep-sea fishing vessels and taking care of the indigenous industry, if necessary, more may be allowed in the near future. The Government is encouraging both, the charter of fishing vessels from abroad, as well as the setting up of joint ventures for quick and diversified growth of the industry. With these measures, we will be exploiting our marine resources to a much larger extent in the near future.

I find that nearly 90% of our seafood exports is constituted by one single item, namely, shrimp. At the same time, nearly 91% of exports in terms of value are confined to two countries, namely, Japan and USA. While we may have reason to feel happy at the large exports of shrimp or the large exports to Japan and USA, this over-dependence on one item and one or two countries is not conducive to the healthy growth of marine exports. Also, even in the case of shrimp, the quantity exported has been more or less constant in the last 3 years and the increase in export value has come about due to increase in unit value. For sustaining the export growth, it is essential to build up the production base for shrimp and other varieties. Though the Government has been encourag-

Mr. Mohan Dharia, delivering the inaugural address. Also seen in the picture are (from left) Mr. Baby John, Kerala Minister for Revenue, Mr. K. Chandrasekharan, MLA., Mr. S. Gopalan, Chairman, MPEDA and Mr. C. Cherian, President, Seafood Exporters Association of India.

ing diversification of seafood markets and products through market surveys, sales teams, grant of cash assistance and promotional assistance for despatch of new items, a real break-through in this sphere can only be achieved through active interest of the exporters.

It is well known that Indian products get relatively lesser price. This is because of a very large number of exporters trying to market small quantities under individual brand names. If there is group marketing, the unit value realisation in view of bulk supplies will be higher. Inter-se competition between the exporters will be minimised. In addition, the promotional expenses would be reduced. Once the brand establishes reputation for quality, grading and accurate weight, it would command a much better price. For this purpose, exporters may consider the desirability of forming a consortium to take advantage of the benefits of group marketing.

At present, India is exporting only 63000 tonnes of marine products, the raw-material required may approximately be taken as 1.2 lakh tonnes. This is only 5% of the total fish produced i.e. 2.5 million tonnes, and 95% of our production goes for the domestic market. The domestic market, with 630 million people, is quite large. This aspect has been neglected all these years. Even for the development of a viable export industry, a proper domestic market is a must. Over the years, the quantum of fresh fish marketed has increased to about 70%. Freezing is being carried out almost exclusively for the export market. Canning comes to only 0.02%. Of this, 50% is exported and 50% sold in the internal market.

There is a need for introducing and popularising frozen fish in the internal market. This is because there is extreme fluctuation in the availability and demand, leading to instability in price. From quality point of view also, freezing has to be developed. For this purpose, a chain of refrigerated storages has to be developed and linked with refrigerated transport vehicles. Apart from whole fish, it would be possible to market minced fish, fish sausage, fish ham and fish cutlets in the internal market. Particularly in the urban market, there is also a perceptible demand for ready-to-serve, value-added products, which are mostly in the frozen form. This will also minimise the idle capacity existing in the freezing plants which are now used only for export.

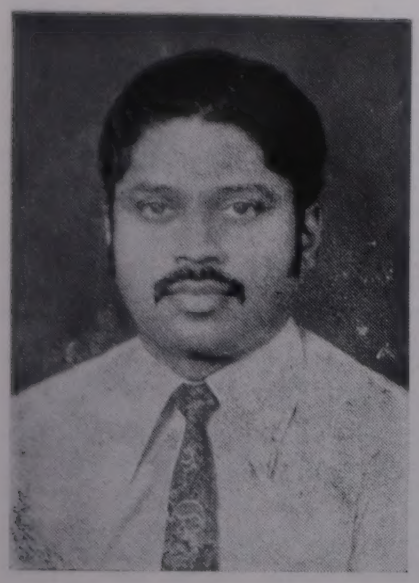
In order to develop the seafood industry in an organised manner, the Government has set up MPEDA in 1972. This Authority has been promoting seafood industry/exports through its various activities. The Authority now proposes to tackle the twin problems of the industry namely (a) increasing availability of shrimps and other marine products and (b) improvement of the quality of seafood items in an organised manner. To tackle the first problem, the Authority has started pilot projects for prawn culture, eel culture and brackish water shrimp farming on a modest scale. For tackling the second problem, the Authority has initiated work on Frozen Storages and proposes to provide services of refrigerated vessels and refrigerated trucks to processors, and ice, fish-holds and fish boxes for fishermen. In order to improve the sanitary conditions at landing centres, landing platforms are being built. The Authority also proposes to launch a programme of educating the fishermen and workers involved in the industry, in personal hygiene and in proper handling of marine products. The Export Inspection Council has now introduced implant inspection scheme in the marine products industry, in addition to pre-shipment inspection.

These measures, I am sure, will help in achieving definite improvement in availability of shrimp, improving the quality of our marine products, and promoting our exports. However, these objectives could never be achieved without the active co-operation of seafood industry and exporters.

India will have to develop new non-traditional areas for exports. Old practices and emphasis on exporting essential items of mass consumption and agricultural inputs have done great harm and the Government has therefore decided to provide a positive new orientation to our export trade. Exports cannot neglect the social obligations. We would therefore like to expand the export base after taking due care of the basic domestic demand. While taking recourse to new items, generation of employment with a view to solving the massive problem of poverty is equally important. All our efforts are needed to accelerate the growth rate of exports for early attainment of the objective of self-reliance. Blessed with a sea shore of nearly 3000 miles, our marine products provide unlimited opportunities in this regard. Let us all endeavour with concerted efforts in that direction. I may assure you of all possible co-operation of the Government in these efforts.

I have great pleasure in formally inaugurating the building of the Seafood Exporters' Association of India.

JAI HIND



Chairman's Address

AT THE 15th MEETING OF THE MARINE PRODUCTS EXPORT DEVELOPMENT AUTHORITY

Speech by Mr. S. GOPALAN, I. A. S.

I welcome you to this fifteenth meeting of the Marine Products Export Development Authority.

During 1977-78, we exported 65967 tonnes of marine products valued at Rs. 180.95 crores as against 66750 tonnes, valued at Rs. 189.92 crores during the year 1976-77. The decline in terms of quantity exported was only marginal. The decline in terms of value was due to appreciation of the value of Indian Currency vis-a-vis U. S. Dollars. The proposed export target for 1978-79 is 73780 tonnes, valued at Rs. 226.57 crores.

Shrimp continues to be the most predominant of the marine product exports. The Union Minister for Commerce, in the recent meeting of Export Promotion Organisations made a pointed reference to this factor and exhorted that there should be diversification which alone will contribute to sustained export growth.

Some degree of diversification has, no doubt, taken shape bringing in its wake exports of lobster tails, cuttle fish, squids etc. Technological improvements, like for example for exclusive or specialised catches of cuttle fish could hasten the process of diversification of exports. We could, in my opinion, safely rely upon our national institutions like the Central Institute of Fisheries Technology and Integrated Fisheries Project in securing the required technological improvements.

An accurate assessment of our deep-sea resources and based on that, significant deep-sea fishing efforts are again inevitable to secure diversification. Deep-sea fishing, involving as it does, huge capital investments is beyond the reach of the general run of marine product exporters. So, this should become the field of specialisation of big entrepreneurs, particularly corporate bodies.

In achieving diversification of exports, better production efforts should be complemented by increasingly newer styles of market development. Apart from participation in international food fairs so as to exhibit the available range of goods and to make trade-contacts, sea-food recipe demonstrations would be a significant new effort which could stimulate consumer demand and, while tackling the importer could be a good "maintenance" strategy to maintain the present ranges of exports, breaking through the barrier of the importer and reaching at the consumer would be a more effective "promotion" strategy.

The overseas market surveys should also assume new dimensions. The traditional pattern of surveys involving emphasis on trade contacts and study of product demand and market structure should increasingly give place to objective oriented surveys-that is surveys geared to achieve the objective of exporting specific quantum of specific and varied products on a time-bound basis. The International Trade Centre has emphasised this point in regard to the proposed market survey of Japan.

Side by side with efforts on increasing diversification of exports, there is also need for promotion of shrimp production, particularly in view of the market for shrimp already well established due to sustained efforts by the Industry. The Planning Commission has given clearance to the Authority to implement a shrimp culture scheme. Con-

siderable research efforts have already been made in this field in different parts of India by different agencies — particularly by the Central Marine Fisheries Research Institute. The Industry has already taken to field trials of shrimp culture. There is need for taking stock of research results and field experience now available in the country. The Authority is, therefore, proposing to organise an All-India Symposium on shrimp culture associating the Industry. The Authority has further made the small beginnings of a survey of brackish water areas that could possibly be utilised for shrimp culture.

Avoidance of wastage in the existing production is as important as adding to production. At present, considerable wastage in production occurs at various stages—in landing, transport, processing and storage. In order to tackle this problem at every stage, the Authority has evolved a number of schemes—to finance improvements of landing centres, to run refrigerated trucks, to train processing operatives to put up cold storage in places like Cochin, Calcutta and Paradeep and to put up a Dry Fish Storage at Tuticorin. The Authority can also consider financing of fish-drying facilities in Fishing harbours and other places where required.

The need for quality of products cannot be over-emphasised. Inspections by the Export Inspection Agency assumes importance in this context. Increasing co-operation from the trade and conscious efforts on the part of the Export Inspection Agency in getting live to the genuine problems of the trade could alone make quality inspections effective. A right step in this direction has already been taken when the top authorities of the Export Inspection Agency, representatives of the trade and of the Authority met recently at Cochin and discussed ways and means of smoothly implementing the Inplant Inspection Scheme.

At present, there is duality of agencies in carrying out inspections. The Export Inspection Agency is to do the inplant inspection while the Authority is concerned with inspections at pre-plant stages. It would be desirable that only one agency operates in the field of quality inspections.

In the context of special arrangements for pre-shipment inspections in India, there is need for execution of Memoranda of Understanding between the Export Inspection Council of India and the Food Administration of the concerned countries so that the post landing problems in the countries of import are minimised for the shippers.

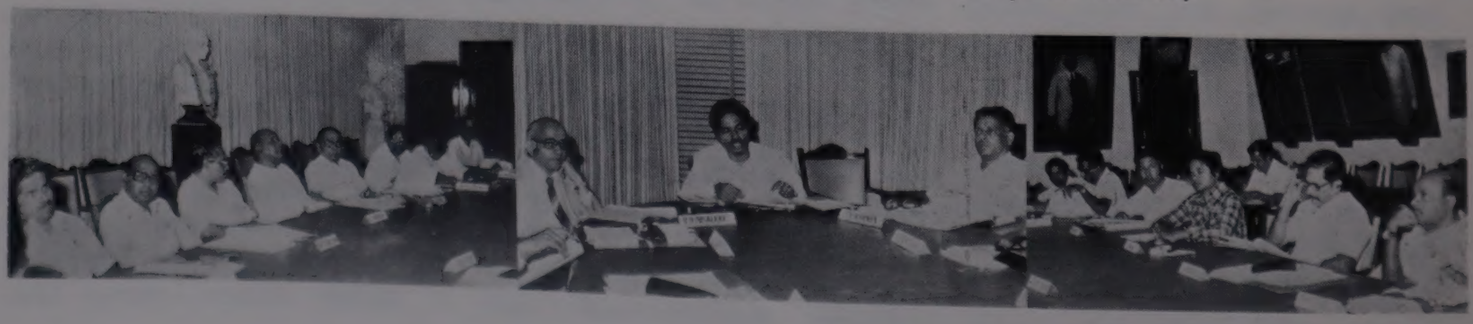
In order to ensure the maintenance and further development of European market, there is need for more frequent and regular sailings to the continental ports. The Authority has already initiated dialogues on the matter with the officials of the Shipping Corporation of India. Provision of container service in the various ports for this purpose is proposed to be studied jointly with the Corporation.

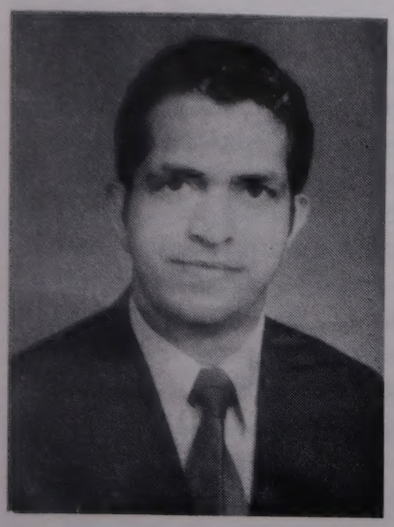
Several important suggestions have come from the Trade regarding improvement of the quality of "Prime", the weekly publication of the Authority which furnishes information on price trends in the international markets. These suggestions will be followed up. It is hoped that with the establishment of the Authority's Trade Promotion Offices at Tokyo and New York, there will be greater facilities for bringing about improvements in the "Prime".

Before concluding, I would refer to a basic problem that is plaguing the Industry—the problem of growing unhealthy competition for static or even decreasing availability of raw-materials. One possible solution could be regulation of the Industry. Will the Industry itself give thought to this solution?

Thank you.

A view of the 15th meeting of the Marine Products Export Development Authority





A NATIONAL FISHERY INTELLIGENCE NET WORK FOR INDIA

Dr. K. P. P. NAMBIAR
Managing Director,
Kerala Fisheries Corporation Limited

Devastating cyclones that result in considerable loss to the fishing industry is a regular phenomenon along the coastal states in India. This has naturally focussed attention on the lacunae existing in the field of communication and weather warning in the country with particular reference to mechanised fishing vessels. Almost, every year huge losses are incurred both in men and material throughout the country due to want of adequate communication facilities either from boat to boat or from boat to shore. Except for a limited number of vessels of above 57′ or so OL, almost all the fishing boats are presently devoid of any Radio Telephone or Radio Telegraph facility. Even for those fishing vessels having Radio Telephones, the wireless communication with the shore is not always easy due to lack of adequate shore stations and the cumbersome procedures involved.

There are several Government agencies such as the Exploratory Fisheries Project, Integrated Fisheries Project, Central Institute of Fisheries Nautical & Engineering Training, Central Institute of Fisheries Education and so forth already having their own facilities with transmitters having a range varying from 200 to 400 Kms located in places like Bombay, Cochin, Vizag and Tuticorin. Additional stations are also going to be set up in Calcutta and Port Blair. Nevertheless, their shore stations are primarily concerned with the interest of the boats belonging to the respective agencies. The total number of boats owned by these agencies vary from two to twentyfour. None of these agencies is engaged in catering for the industry in general, for obvious reasons. The Exploratory fisheries project for instance, is reported to be having 24 vessels equipped with Radio Telephones and they have some twelve shore stations under their control. It is reliably learned that they have recently received eight numbers of Radio Telephones with 100 W. transmission from SIMRAD, Norway, as aid. It is not clear how these costly equipments are going to serve the industry as a whole.

The only source currently available for transmitting information to all types of fishing vessels out in the sea in India is the All India Radio. However, it is an irony that in spite of the tremendous expansion of fishing activities in India, the A I R is yet to start regular broadcasts for fishermen and fishing boats similar to the agricultural bulletins currently in vogue. This becomes all the more significant when one considers the fact that this country has a total coast line of about 5600 Kms and an estimated number of 15000 mechanised boats in operation. Further, the declaration of a 200 mile economic zone and the subsequent decision to allow import of a large number of fishing vessels by the Government of India is noteworthy in this context.

It is in this background that the following proposal is drawn for immediate as well as long term implementation by a suitable agency in a centralised fashion.

For immediate Implementation

The Government of India should be urged to introduce broadcasts specially meant for fishermen out in the sea, on a regular basis and in the event of cyclones, other vagaries of nature and emergencies, on a continuous basis so as to warn the vessels in time. Fishery bulletins may be prepared by a competent agency in consultation with the various national research and extension

centres. All the essential and relevant information on fishing grounds, catches, quality control measures etc., will have to be included in such bulletins. These broadcasts should be made in regional languages from the respective maritime states. For this purpose, formation of a Co-ordination Centre with due representation from Indian Meteorological Department and several National and State Fishery agencies need to be considered.

Long Term Projects

As a long term measure, establishing a separate transmitting agency with its own communications net work can be considered. Such an agency can effectively function by utilizing the already existing facilities as also by making use of the remarkable progress the country has made in the field of electronics and communication. This agency should be in a position to take up the responsibility of co-ordinating and operating an efficient fishery intelligence net work on a national level with the required control over the fishing industry and adequate liaison with corresponding organisations abroad.

The following objectives can be identified for justifying this venture:-

1. Providing timely weather warnings to needy fishermen through periodic transmission of meteorological data.
2. Passing on information regarding suitable fishing grounds with details of species available, to the Skippers of fishing vessels so as to guide them suitably.
3. Educating the primary producers of marine products on the hygienic standards and quality control measures from the time of hauling their catch to final processing.
4. Collection and dissemination of data on raw material prices, supply position, internal and external demand as also other relevant market information.
5. Collection and compilation of field data on hydrological and biological factors with the aid of specially designed equipments from selected vessels under the supervision of properly trained people. These data are of immense help in fishery forecasts as well as in locating fishing grounds.
6. Proper co-ordination and exchange of information among various national and international agencies engaged in similar activities, a few of which are mentioned below:

a) **National**

i) Indian Meteorological Department
ii) Survey of India
iii) Various Central and State Fisheries and Oceanographic Research Establishments.

b) **International**

i) World Meteorological Office (WMO)
ii) Scientific Committee on Ocean Research (SCOR)
iii) International Oceanographic Commission (IOC)

IMPLEMENTATION:

1. As the first step, a survey is to be conducted on the communication facilities already existing in the fishing vessels with regard to the technical specifications of the equipments, the size of the vessel, ownership etc. Along with these data, the details of already existing shore facilities such as shore transmitters with the private and public agencies are also to be gathered.

2. On the basis of the information collected above, all the mechanised fishing vessels may be divided into three categories viz.

a. those having 50 W to 100 W Transmitter-cum-Receiver and with a range of upto 500 Kms.

b. those with 15 W Transmitters-cum-Receiver with a range of upto 45 Kms.

c. the remaining vessels with no communication facility at all.

3. The vessels with no communication equipment should be further divided into two groups on the basis of their size so as to earmark the smaller ones to be equipped with small SSB (Single Side Band) receivers. The bigger ones may be asked to get themselves equipped with a 15 W Transmitter-cum-Receiver by framing suitable laws as well as by amending the existing laws on radio transmission.

4. Co-ordination of operation of the existing shore stations and communication facilities under some suitable agreements by a central agency. Additional stations are to be established under the direct control of the same agency or its research wing who in turn should be entrusted with the task of monitoring data on all aspects of fishing such as hydrology, biology and meteorology from time

to time so as to be recorded at the respective shore stations.

The transmission of useful information for the fishing boats can be made from shore stations to big and medium vessels out in the sea with two way communications facilities. From these vessels, the information can be passed on to smaller vessels having only a receiver set suitably tuned for the purpose again at fixed intervals.

5. Needless to say that for this kind of a communication net work the expertise indigenously available with M/s. Bharat Electronics, Bangalore, can easily be utilised. It is quite possible that the 15 W VHF Transreceiver costing Rs. 9800 (approx.) and 50 W VHF set costing Rs. 27,275 (approx.) already developed by M/s. Bharat Electronics Ltd., will be useful in this set up. A suitable SSB receiver set costing approximately Rs. 3,000 may not be difficult for the BEL to develop for the sake of small boats. Obviously, the BEL might be interested in designing further models at cheaper cost to serve the purpose when mass demand is created.

May be at a later stage, this country can have more number of her own monitoring vessels as well as helicopters for the purpose of data collection and transmission.

6. When once the monitoring of data is made regular, proper contacts can be established at a centralised shore station for processing such data in the light of similar information obtained from Meteorological, Oceanographic and Biological Research Institutions in India and abroad.

7. Data collected in this way are to be fed to a computor for processing and subsequently using in fishery forecasts.

CONCLUSION:

Stages 1 and 2 can be undertaken with the existing facilities available with such agencies like the Marine Products Export Development Authority. However, for the subsequent steps, special funds will have to be provided by the Government for the purpose. Co-operation from the Coast Guard set up and the various Port authorities will be readily forthcoming in the later stages of implementation. Though the defence services might have their own reservations about this scheme it is envisaged that even the Indian Navy can be associated with the whole plan at some stage.

It may not be that difficult for small fishing vessels to have a receiver set for the sake of safety and convenience, provided such sets are available at a reasonable cost. With the tremendous progress made by the electronics industry in India, this should not be an insurmountable problem. The feasibility of introducing some sort of Government subsidy or loan for procuring the required equipments also needs to be examined.

As an integral part of overall development of marine products industry in India, this project is sure to yield tangible returns in due course. Apart from that, providing data to international agencies and Research establishments in India and abroad, in the form of a consultancy service is sure to bring appreciable returns. Above all the impact that the communication will make on the fishermen leading to better quality fishes and shrimps being brought to the shore thereby enhancing their returns is of utmost importance.

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GROWING USE OF 'U. P. C.' AT CHECK OUT COUNTERS IN SUPER MARKETS IN THE WEST

V. RAMALINGAM
(Dy. Director, MPEDA)

Introduction

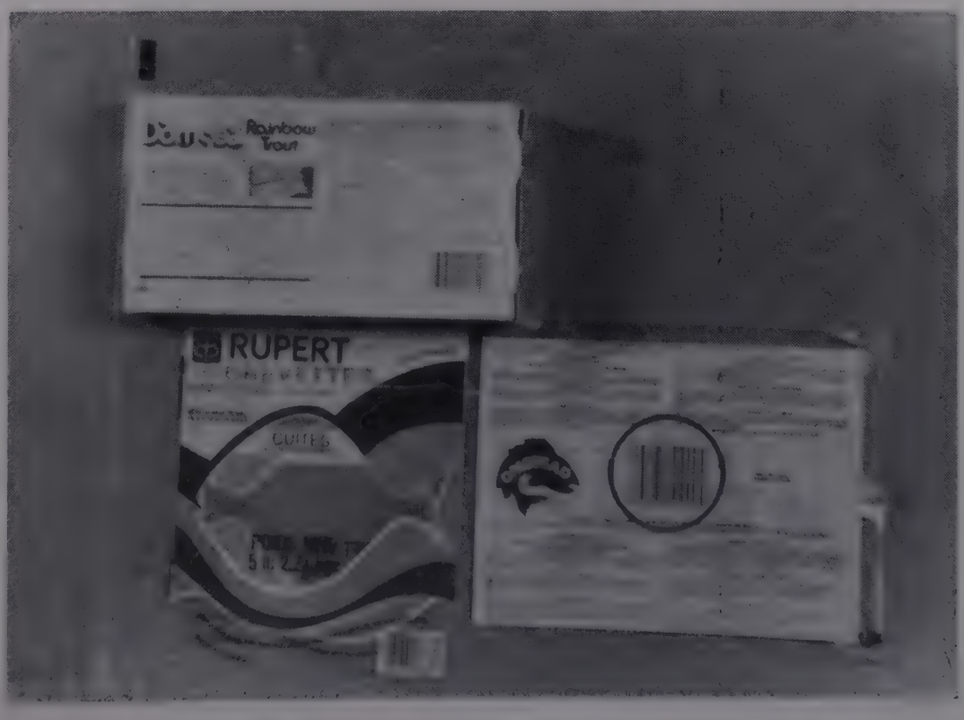
When you are in a foreign, country particularly U. S. A. or Canada, you come across a bunch of parallel lines marked on almost every article arranged for sale in super markets. This type of marking is found even in consumer packs of fish items—(Frozen, canned and dried) blades, potato chips, laundry soap etc. The bundle of lines are of varied thickness—thin lines, fat lines and double lines. They resemble like mini theatre TV Screen with broken horizontal hold. By the side or below the group of lines, there is also a ten digit number. It is of interest to understand what these funny mysterious lines with a long digit number are?

Universal Product Code

These group of lines appearing in a corner of the label is called UNIVERSAL PRODUCT CODE which is abbreviated as UPC. In 1970 an adhoc committee in the name of "Blue Ribbon Committee" was formed by the Food Industry in U. S. A. to study a universal product code for the effective use of the organisations in the distribution channels. This committee included 5 top manufacturers and 5 top distributors in U. S. A. They produced a workable coding system to replace the existing numbering system (codes) which were in use for many years. The UPC system began operating in 1973 in U. S. A. for the first time. In Canada the same code was subsequently introduced. This is now being administered by the Grocery Products Manufacturers of Canada.

The little set of lines and numbers identifies every product currently in distribution. Of the 10 digit number, the first 5 identify the manufacturer, while the second 5 are assigned by the manufacturer to each of the items he produces. Nowhere on the UPC symbol is there a price in human readable form. Growth capacity could go upto 30 lines of information. An equipment called "scanner" which is attached to a computer can alone read the codes.

Universal Product Code Consumer Packs



How does the system work?

For operating Universal Product Code, the super markets should have computerised cash registers with computerised check out. The main equipment required are:

1. Scanner which is connected to Central Processing Unit (CPU)
2. A viewer at the check out
3. Computerised cash register (CCR)

Mr. X wants to buy a packet of biscuit from a Super Market. He selects the packet from the Shelf where the price of the packet is indicated. As already referred to, no price indication is made on the packet. He brings the packet to the check-out counter where the clerk passes it over a scanner. The scanner reads all the data on the code in a split of a second and sends them to an in-store Central Processing Unit. The CPU finds out the exact price for the item and relays it a viewer at the check-out. On seeing the price in the viewer, Mr. X pays the money; the cash register records it.

Simultaneously it deducts one packet of biscuit from the inventory in addition to the recording of cash register number, date, time of day, tax (if any), patronage dividend, cash and change. endorsment of pre-authorised cheque for deposit. It can also accommodate trading stamps. A copy of the cash register receipt issued to the Customer is as given below:-

Hometown food mart store
12304/20/7-

GRO	.54F	CEREAL
NFD	3.90H	WINSTON
GRO	.57F	CHILI
MT	1.13F	T BONE
NFD	.43C	KLEENEX
PRO	.47F	BANANA
NFD	.19C	DOG FOOD
NFD	.35C	GLAD WRAP
GRO	.07F	KOOL AID
GRO	.07F	KOOL AID
GRO	.06F	KOOL AID
	.06F	TAX
	7.84	TOTAL
	10.00	CASH
	2.16	CHANGE

0007 02 4 4.22.PM

Courtesy:
NATIONAL CASH REGISTER

Universal product code (U. P. C.)

Advantages of the system

1. As the price is not required to be marked on the individual items, it eliminates hand pricing.

2. It improves efficiency of supermarkets.
   (a) Reduces considerably the waiting time of the customers at the checkout counter by speeding up check-out time.
   (b) Avoids suspicious settlement reports of the clerks in the check-out counters and makes easier the balancing of daily accounts.

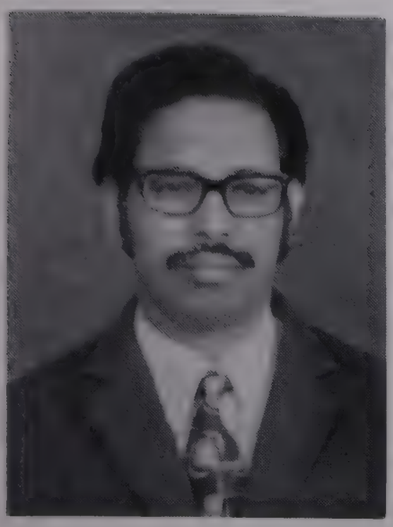
3. Super markets, which normally operate on a low profit, are highly competitive and depends on volume sales. If efficiency is increased, there is greater scope for the super market to bring down the prices.

4. Covers more flexibility for checkers at the checkout counters. They can move from lane to lane without ever having to take a terminal reading.

5. Facilitates getting unit inventory control. Uncovers slow moving items. Keep close watch on perishable items, sale items etc.

6. Provides better control on finance, personnel and in short the overall business.

Keeping the above advantage in view, the Super Markets in U.S.A. and Canada are increasingly moving to computerising checkout counters using the Universal Product Code. Even if we think of exporting our marine products to U. S. A. and Canada in consumer packs, each pack may be required to have the UPC. The time is not too far for adoption of 'UPC' even in India.



REFRIGERATED TRANSPORT A MUST FOR THE SEAFOOD INDUSTRY

Dr. K. RAVINDRAN
(DY. DIRECTOR, MPEDA)

Transport assumes considerable significance for a perishable commodity whether they are simple food stuffs for the city-dweller, flowers for export or delicacies for the affluent. Its importance is further intensified for a commodity like fish particularly when large numbers of country craft and mechanised boats operating along the West and East coasts of India land their catches in hundreds of small coastal fishing villages. Refrigeration systems are becoming a major factor in modern truck transportation and producers are learning that reduced losses and delivery of higher quality produce to the market place more than repay the higher costs of refrigerated transport. And the very existence of this technology means that markets can be opened for regions once too remote to benefit from the development of distant population centres.

The need for refrigeration in the food industry

There is a tendency to augment food stuffs, particularly in food that is rich in protein, minerals and vitamins, elements that are usually lacking in the present day diet of the population. These are generally very perishable foods (meat, fish, milk, eggs and to a lesser degree fruits and greens), requiring refrigeration for storage in the fresh state, whilst still maintaining all their other original qualities.

The freshness and quality of frozen seafood is determined to a large extent by temperature and humidity they encounter while in transportation and during storage. India with a tropical climate is warm and humid and the more warm and humid the climate, the greater is the need for refrigeration. The need for refrigeration in tropics is more than in temperate zones, in order to control the growth of micro-organisms and enzymatic activities.

Any increase in the economic activity of a country will result in the development of trade interchange between neighbouring or far off countries. This interchange mainly with perishable food stuffs (particularly meat and fish), must with the help of refrigeration, be transported by land, sea and air.

The purpose of freezing seafood

The purpose of freezing seafood is to lower its temperature and thus slow down spoilage so that when the product is thawed after cold storage, it is almost undistinguishable from fresh fish.

The need for freezing and cold storage will arise when preservation of fish by other means, such as chilling with ice is unsuitable for the period of storage time involved. Preservation of fish by chilling may only be suitable for a number of days, or a week or two at the most, whereas good freezing and cold storage will enable the fish to be kept for months or even up to a year or more.

Preserving seafood by freezing has a number of applications. If the fishing grounds are a long way from the port of landing and fishing trips last many days, freezing at sea will have to be considered as a means of keeping the catch in good condition. If the consumer market is distant from the fishing port, freezing again is necessary to preserve the fish during the period of storage, transportation and distribution.

Freezing may also be considered when there are periods of glut and scarcity. Freezing at times of plenty and storage at low temperatures allows seafood to be marketed in accordance with demand.

This is to the advantage of the fishermen, the processor and the consumer, since it results in the regulation of supplies, more uniform and usually better fish quality and more stable prices.

The long periods of storages that good freezing and cold storage practice allow, also means that fish that are caught only during short fishing seasons may be made available all the year round. Many fish processors involve a higher investment and require a good deal of labour. Freezing the fish and processing at a regular rate, rather than in accordance with an unpredictable supply will mean better utilization of these resources.

Preservation by freezing and cold storage is usually required if fish is to be exported and it also ensures this valuable protein food to be distributed to a wider market.

The many advantages of freezing are therefore obvious and in developing countries and especially a vast country like India, freezing of fish and transporting them in refrigerated vans for internal marketing would solve much of the protein deficient nutrition problems of the country.

Refrigerating Systems

Whether it be a railroad car, a refrigerated trailer (reefer) or truck, there are four usual methods of keeping cargo at a cool temperature-mechanical refrigeration, ice cooling, cryogenic cooling and precooling.

Mechanical refrigeration

Mechanical refrigeration is now used by many truckers. The principle of operation is by absorbing calories at one end and getting rid of them at another. This is done by pumping a refrigerant between two points. The refrigerant picks up heat through a coil (evaporator) inside the cargo space and discharge it through another coil (condenser) on the outside. The refrigerant is circulated through the system by a pump (compressor) usually powered by a gasoline or diesel engine or by a motor generator system.

Mechanical refrigeration units have undergone a gradual evolution in design that has vastly improved efficiency and life expectancy, and with minimal maintenance the mechanical refrigeration unit should perform satisfactorily for eight to ten years and possibly as much as twenty.

Recent innovations indicate promise in the use of hydraulic motors rather than the usual internal combustion engine to operate the compressor.

The use of electric power is gaining favour today among truckers. An internal combustion engine drives a generator which, in turn, powers an electric motor which drives the compressor. The first advantage of this is that it permits mounting the engine and generator beneath the floor or the trailer for easy access by the mechanics. The second and major advantage is that it may be plugged into an ordinary electrical circuit and operated without the refrigeration unit engine. This not only permits engine service while the unit is operating, but permits the trailer to be used as a portable warehouse, without the cost of operating an internal combustion engine continuously.

In most areas of the world, fuel is expensive and there is an advantage in using public sources of electricity whenever possible.

Ice cooling

Ice cooling was one of the first refrigeration methods used. Its advantages are excellent absorption of calories as it turns to water plus the addition of water vapour to the air. Its drawback includes its heavy weight, the labour required to handle it and when salted, the accelerated deterioration of the truck body.

Cryogenic cooling

Cryogenic cooling is relatively new and in this system liquid nitrogen or liquid carbon di-oxide is carried in a pressurised tank. A temperature sensor activates a valve which releases the liquid through a spray nozzle at the celing of the trailer. When the liquid hits the warmer air, it expands into gas. This action called 'flashing' uses a great amount of energy and absorbs calories from the cargo area. A disadvantage to this system is that if the truck doors remain sealed for a long time all the air in the trailer will be replaced by the nitrogen or CO_2.

Pre-cooling

Pre-cooling is a method whereby by either the trailer without its own refrigeration device is placed in a cooling tunnel, or is loaded with a cold cargo or both. The insulation of the trailer is sufficient to hold the inside temperature at safe levels for short hauls, and this method is widely used among processors of seafood in India for transportation of fish from the landing areas to the processing plants and to the wharf for shipment.

Advances in Insulation

The evolution in refrigerated trailers and in truck body design has been spectacular and one of the greatest improvement has been the use of urethane and other types of foamed insulation instead of once popular fibreglass. Use of foamed insulation has permitted much more laxitude in design, and

when a combination of relatively high temperature requirements and a critical space situation exists, the thinner foam insulation has added considerably to cargo space without sacrificing thermal properties. Use of foam insulation also permits conforming to very exacting thermal specifications, and since it is not porous, it acts as a barrier to air currents. One of the major advantages of foamed insulation, however, is its resistance to moisture absorption. In refrigerated trailers and trucks much of the difference is based upon the insulation used and the method of installing it.

Methods:

There are three common methods of applying insulation.

1. The first is simply placing blocks of insulation between side posts in the trailer walls.
2. The next popular method is spraying, when the insulation is applied before the inner lining is applied.
3. The third method is simple foamed-in-place-insulation when liquid plastic foam is pumped into the walls of the trailer where it expands and solidifies to fill each cavity between side posts. The insulation in this case adheres to the walls adding structural strength to the unit. This method is recent but available in India.

Interior lining

The material to be used as interior lining is an important factor to be considered in trailer or truck-body selection. Plywood has been used for a long time but is highly vulnerable to damage. The popular alternative to plywood has been fibreglass or other high strength plastic materials. Aluminium is also commonly used.

Next to the quality of insulation, the most important design factor is the rear doors as doors, seals and hinges suffer a good deal of abuse in all operations and all are subject to misuse. The entire door frame must be rigidly built as possible to prevent distortion of the door opening and subsequent heat leak. Stainless steel, fibreglass and aluminium are used for the best quality trailers.

Selecting mobile refrigeration requirements

Selection of equipment depends largely upon the commodities that are to be handled. For the transportation of frozen seafood it is required that a temperature of -20°C be maintained inside the refrigerated truck. Increasing insulation thickness no doubt reduces the capacity of the vehicle but it should be remembered that an 8cm. foam insulation is only about 88% as efficient as 10 cm. If neither weight nor cubic capacity are limiting factors, the investment in better insulation may be regained in reduced costs of operating and maintaining the refrigeration unit, as any improvement in heat loss characteristics of the body is translated into lower fuel consumption and less engine wear. Furthermore, there are mathematical calculations that can be made to determine the approximate cooling requirements of different commodities and to arrive at refrigeration capacity needed.

Conclusion

In view of the rapid deterioration of food stuffs under tropical conditions in especially a country like India, the need for a well organised, refrigerated transport is well recognised. Furthermore, many of the shipping lines are now insisting that the frozen products should not have a temperature higher than-12°C at the time of loading and, in the short time intervening between transport to the wharf and loading, the frozen products warm up with the result, it is difficult to present cargo at a temperature of (—)12°C without the use of refrigerated trucks.

The estimated initial cost of a refrigerated truck in India is very high. The approximate cost is as follows:

Cost of one goods chassis	Rs. 1,10,000
(7 to 8 tonnes pay load capacity) Cost of polyurethene insulation and refrigeration (including design, fabrication installation and commissioning charges)	Rs. 2,34,500
Total	Rs. 3,44,500

In this respect it should be mentioned that the Marine Products Export Development Authority, Cochin, India, with a view to improve the final quality of the product, has embarked on a scheme to operate a fleet of refrigerated trucks for use in the movement of frozen seafood on a no-loss-no-profit basis. This would supplement the existing reefer and insulated trucks under operation by the processor exporters.

This extended service would not only meet the requirements of the shipping lines but also popularise the use of refrigerated trucks and improve the final quality of the product.

There is no doubt that an adequate refrigeration systems for transport of seafood might cost a bit extra, but they pay large dividends in the quality of perishable products delivered.

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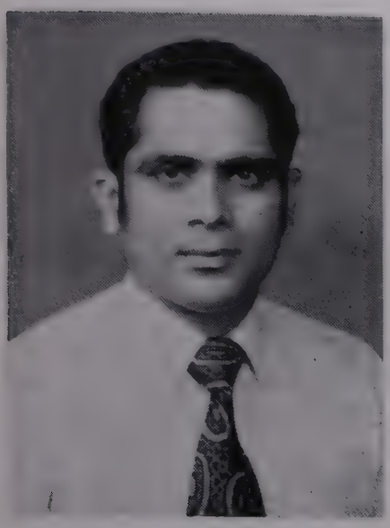

DEVELOPMENT OF FISHERIES IN KARNATAKA STATE

A. S. SHENOY
(Dy. Director, MPEDA)

Introduction

The Karnataka State with a coast line of 320 kms. and a shelf area of about 25,000 sq. kms. has two coastal districts namely, the North Kanara and South Kanara. About 200 fishing villages are scattered all along the coast with fisher folk population of over one lakh out of which 24,000 fishermen are actually engaged in fishery. The annual marine fish production of this state is estimated to 1,10,000 tonnes.

The development of fisheries in Karnataka State first attracted attention of the State Government during the Second Plan period with the establishment of a Fisheries Department. Since then ancillary facilities for preservation, processing, distribution and marketing had been expanded considerably. The State which had only a few mechanised boats in 1957-58 now has nearly 1250 mechanised fishing boats. The exports of marine products have risen 100 fold in the last 16 years from Rs. 7 lakhs in 1957-58 to Rs. 10 crores in 1976-77. The State now ranks third among Indian marine products exporting states.

Development of Inland Fisheries

Besides the development of coastal fisheries, the Karnataka Government has taken steps to improve the inland fisheries. The State now possesses about 3,500 miles of river area, 26 reservoirs and 32,000 major or minor tanks. About 10 lakh acres of water area is available in inland area for fisheries management of the State. There are about 6 lakhs of fishermen in inland area, most of whom are only part time fishermen. The annual fish production from inland water is estimated to about 60,000 tonnes an year. The State Government has constructed Taluk Level Fish Nurseries in almost all the divisions of the State. In the following divisions about 4 to 6 nurseries are at present maintained by the State Fisheries Department: —

Bangalore, Mandya, Mysore, Tumkur, Kolar, Chickmaglore, Hassan, Shimoga, Chitradurga, Gulburga, Belgaum, Raichur & Dharwar.

Besides the above nurseries, there are about 25 fish farms in Karnataka State covering about 127 acres. The total stocking space in these fish farms including nursery rearing, stocking ponds and cisterns will cover about 32.5 acres.

Co-operative movement in fisheries

For developing fisheries and also to improve the socio-economic conditions of fishermen, co-operatives were organised in South Kanara District coast in 1915 and North Kanara in 1918. At present there are about 34 primary Fishermen Co-operative Societies and 1 Fish Marketing Federation in South Kanara and about 26 primary Societies and 1 Fish Marketing Federation in North Kanara.

About 78% of coastal fishermen have now come under the co-operative field from the coastal sector. In inland area there are about 61 Fishermen Co-operative Societies and 2 Marketing Unions at Bangalore and Bijapure. In the inland district, the societies are mostly organised near the reservoirs, large lakes or tanks as also river. About 10% inland fishermen have joined co-operative effort.

Karnataka State Fisheries Development Corporation Ltd.

With the emergence of Karnataka State as one of the important states in the export trade of seafoods, the State Government has established a Corporation under the banner, Karnataka State Fisheries Development Corporation Ltd. under Indian Companies Act, with an authorised capital of Rs. 3 crores in January 1971. At present under this Corporation there are 5 ice-cum-cold storages and freezing plants, 6 ice plants and cold storages and 1 ice plant and 2 cold storages. They also have 1 boat building yard, 3 refrigerated trucks, 4 insulated trucks and 2 fishing trawlers. With the increase in the exporting activities of this Corporation, 3 contact plate freezers were added to the Ullal, Kulai and Ganguli plant, and 3 peeling sheds were constructed in the plant near Ullal, Mangalore and Kulai to make the export production in these plants more hygienic. The Corporation, simultaneously, along with the export production, has commissioned a cold chain for internal marketing, connecting all major consuming centres of the State such as Mercara, Virajapat, Gonikoppal, Mysore, Bangalore, Hassan Bhadravathi, Shimoga, where about 20 deep freezers are installed to sell frozen round fish and frozen fish fillets in various varieties to the public at a reasonable price.

Fisheries training and education in Karnataka

To educate the fish folk and help them to use modern gears and processing techniques, State Government had given emphasis on fisheries education by providing ample funds in all of their Plan schemes. Fisheries Schools for educating children of fishermen and training centres for training fishermen in mechanised fishing and improved methods of fishing in inland waters were set up in major fishing villages. The Marine Products Processing & Training Centre set up at Mangalore in 1963 offered training in entire gamout of fish processing for science graduates. Considering the scope of fisheries education, a full-fledged fisheries college was set up in 1969 and it is still the only institution of the kind in India, offering a four-year course in different branches of Fishery Science and related subjects, leading to the degree of Bachelor of Fishery Science (BFSC). This college also offers Master's degree programme in two subjects, viz., Fish Production and Management and Industrial Fishery Technology. The Integrated Fisheries Project at Karwar served as a training house for operating of trawlers, craft and gear and freezing.

Development of Seafood processing Industries

The fishing industry of Karnataka had a chequered career throughout its existence until the shrimp processing industry had developed in seventies. Predominently dependant upon the unpredictable pelagic shoals of Mackerels and Sardines, the fishermen were at the mercy of nature. When the pelagic fisheries failed in any year, it caused famine and undernourishment among the fisher folk throughout coastal area. But with development of seafood industry the menfolk got far better return for the fishing efforts and women folk got employment in the shrimp/fish processing factories.

The main fishing centres of Karnataka are Karwar, Tadri, Honawar, Bhatkal, Ganguli, Malpe and Mangalore for marine fisheries and Tungabhadra, Krishnarajasagar, Shantisagar and Vanivilassagar for lacustrine, and fluvial fisheries. The main type of gears used are gill nets drift nets, shore seines and Rampani nets for shoaling fishes like oil Sardines and Mackerel and boat seines, bottom set gill nets and drag nets for demersal fishes. Trawls are also operated from motorised boats for ground fish. In fresh water habitat shore seines, stake gill and bag nets and traps are employed.

A few years ago the landing of traditional Rampani nets of Kanara coast was so abundant during peak season and facilities for quick transport and preservation were inadequate. It was estimated that about 15,000 to 20,000 tonnes of fish were just converted to manure. But now, due to net work of ice plants and several fisheries feeder roads put up by Fisheries Department the fish is transported to inland area and sold at better prices bringing better returns to the actual fishermen and making more quality to fish available to nation. The shrimp caught by mechanised boats are auctioned or sold at prefixed prices at landing centres in North Kanara District assuring on the spot payment of a better price to fishermen.

There were only two major processors in export front in Karnataka during 1961-62. In 1965-66 about 5 processors came into the export field. In 1968-69 more private entrepreneurs started putting up new units as a result the number of exporters rose to 11. Since then there was gradual increase in export tempo

of seafoods along with increase in production. Now there are a about 22 exporters of seafoods in Karnataka State. There are 69 freezing units with a capacity of 115 tonnes per day. The ice making capacity of the State is 545 tonnes per day, chilled storage capacity 891 tonnes and frozen storage capacity of 1715 tonnes. There are also six canning plants and 4 fish meal units. Of late with the emergence of Mangalore as an all weather port, there is spurt in the economic growth and development of this region.

SUMMARY

With the developmental programmes of coastal fisheries and inland fisheries introduced by Karnataka Government during the Second Plan period and further plan periods Karnataka has emerged as third top states in export front of seafoods. The popularisation of co-operative movement in Karnataka has resulted in improving the socio-economic conditions of fishermen. The spurt in seafood processing units under private sector and setting up of a Fisheries Corporation under Public Sector have helped in increase of exports, employment potential of the State and also in distribution of frozen fish through cold chains connecting all major internal consuming centres of the State. Considering the scope of fisheries education, Karnataka State took the initiative to set up a full fledged Fisheries College to train students in different branches of fisheries science and make them available for employment in fish processing units.

Due to net work of ice plant and several fisheries feeder roads the fish caught in landing centres could be transported to processing units. This has induced private entrepreneurs to set up many seafood units in the State. The emergence of Mangalore as an all weather port has also helped to increase the exports of seafood from this State. The increased tempo of export trend of seafoods could be maintained if exporters are able to get raw material at an economical price, finance to seafood industries are made available at liberal terms and sales tax on purchase of shrimp is abolished.

Acknowledgement

I am thankful to Shri K. Venkatesh, Managing Director of Karnataka Fisheries Corporation, Mangalore and Shri H P C Shetty, Director of Instructions, Fisheries College, Ullal, Mangalore for going through this article and giving me valuable suggestion, in preparing this article.

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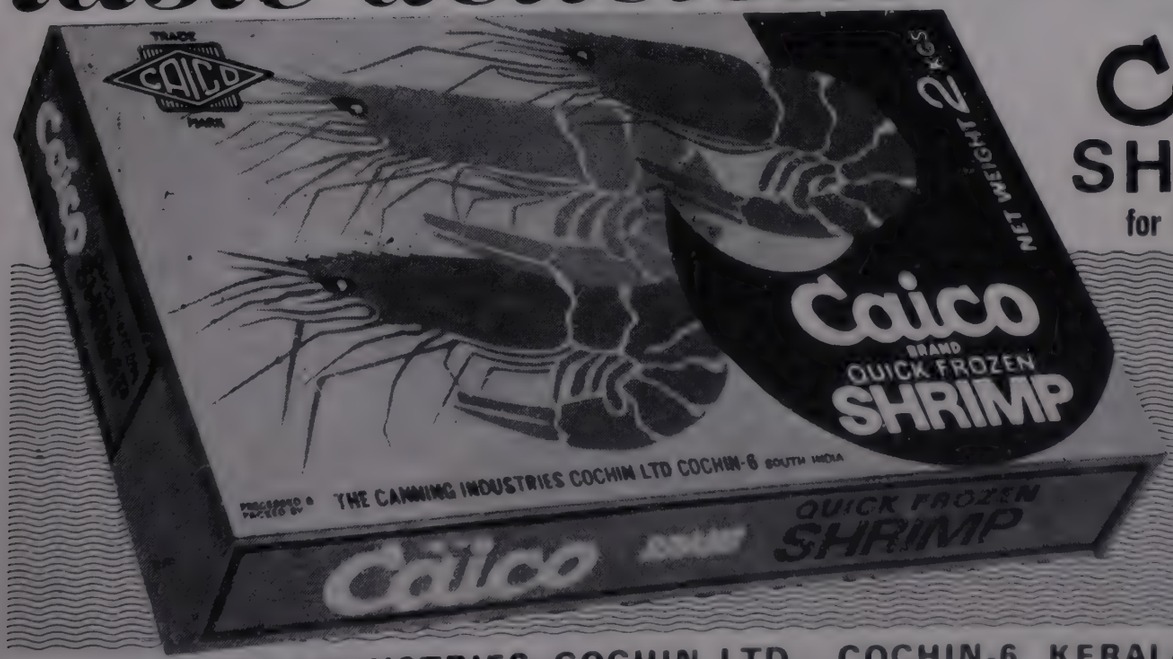

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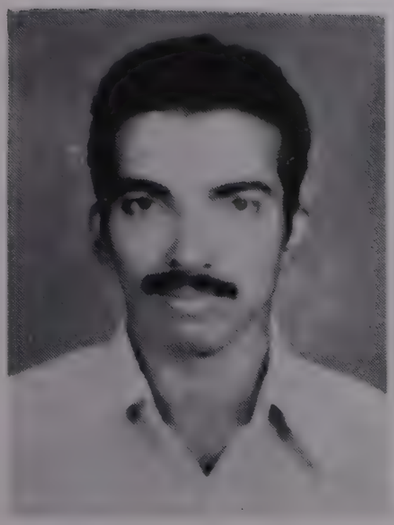

AN ANALYSIS OF THE PRODUCTIVITY TREND IN THE FISHING INDUSTRY OF KERALA

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Introduction

With considerable improvements in the fishing techniques and the infrastructure available for fishing, the fishermen are expected to put less effort in catching a unit quantity of fish. This, in other words, would mean a reduction in the unit cost (effort) of converting the natural resource, fishery, into the final product, fish. The implication is an improvement in the productivity of the industry.

The State of Kerala with considerable investments in fishing boats and shore based facilities to the industry has not been able to make any significant stride in the productivity of the industry. On the contrary, productivity in the industry has been declining over the last one decade. The industry has now reached a stage at which any further fall in productivity would adversely affect the development of the industry as such. The purpose of this note is to highlight the significance of improving productivity in the industry and to suggest ways and means for doing so.

The concept of productivity

Productivity in fishing is usually measured in terms of the catch-per-unit of effort (CPUE). Unit effort is defined as the unit labour time (Man-hours) spent on fishing. The CPUE is the ratio of catch to the corresponding effort of labour. It shows the relation between the output of fish and the input of labour. It should, however, be pointed out that the CPUE is not really a measure of the contribution and efficiency of labour alone; it is actually the joint contribution of the various factors participating in the process of production. It is a measure of efficiency in general, reckoned in terms of one specific factor, labour. Labour is taken as the denominator, because it is the most convenient factor amenable for easy measurement. Again it is the only factor for which there is ready statistical information.

Productivity trend in fishing

Productivity in the industry has been declining over the last one decade. The CPUE which stood at 8.28 kg. in 1967 came down to 4.68 kg. in 1974. This downtrend in productivity is in marked contrast with the rapid expansion in fishing effort. The following table shows the pace at which the two variables, productivity and fishing effort, have been moving in the industry, although in opposite directions during the period 1967 to 1974.

TABLE I

Fishing effort and CPUE in Kerala (1967-74)

Year	Fishing effort (in '000 man-hours)	CPUE (Kg. per hour)
1967	43,476	8.28
1968	41,332	8.28
1969	36,308	8.00
1970	36,691	9.74
1971	45,018	9.90
1972	57,106	5.11
1973	69,748	6.28
1974	86,711	4.68

Source: Central Marine Fisheries Research Institute, Bulletin No. 27, Cochin—1976

Productivity in the industry has been declining over the years with exceptions only in 1970 and 1971 during which years productivity had shown some sign of improvement. This steep fall in productivity during the period 1972-1974 seems to be the result of a rapid expansion in fishing effort. It can be further inferred from the table that under prevailing conditions, productivity in the industry must have declined further below the 1974

level (or at least remained stationary), during the last three years, unless fishing effort had shown any sign of decline.

It would be interesting at this juncture to see whether this declining trend in productivity is a statewide phenomenon or is confined only to some pockets of the State. This would help to understand the magnitude of the problem as well as in devising policies for its solution. The following table shows the behaviour of productivity in the various fishing zones (regions) of Kerala during the seven years prior to 1974.

TABLE II

Catch per unit Effort in the Fishing Zones of Kerala[2] (1967-1973)

Region	Zone	1967	1968	1969	1970	1971	1972	1973
I	1.	2.09	1.79	1.88	0.65	4.82	2.67	3.75
	2.	4.46	3.20	3.11	5.33	2.43	4.44	3.68
	3.	4.41	3.00	5.16	5.01	6.88	4.70	10.53
	4.	4.48	4.92	5.89	5.80	3.93	4.35	5.32
AVERAGE		3.75	3.09	4.58	4.84	4.78	3.72	5.79
II	1.	16.55	18.78	14.42	11.77	17.16	7.42	12.68
	2.	11.08	9.67	9.69	9.26	14.66	3.32	4.49
	3.	8.02	10.24	11.66	17.61	13.70	12.18	12.41
	4.	10.45	10.95	10.76	11.83	10.12	6.12	5.23
	5.	22.57	18.84	9.79	13.86	16.00	7.22	12.00
AVERAGE		12.44	12.94	11.31	12.94	13.60	6.16	7.34

Source: CMFRI

The table presents two distinct pictures. The first one is a slowly rising trend in productivity in Region-I and the second, a steeply falling trend in Region II, especially after 1971. It appears from the above that declining trend in productivity is a problem predominantly felt in Region II. Another feature which is quite peculiar about productivity in the industry is the considerable regional variation in it, Region II being more productive.[3] The regional gap is however getting closed by the fall in productivity in Region II and the slow rise in productivity in Region I. Now it is important to see why productivity is falling in Region II. But before that it is essential to know why it is important to prevent this fall in productivity as well as the need to improve it.

The need for improving productivity

Improving the productivity in the industry is essential for the following reasons:

a. Declining productivity in the industry will be adversely affecting the earnings of the fishermen. This is because the fishermen are paid according to the "lay-system" which stipulates a direct relation between their catches and their earnings. Any reduction in their catches due to a fall in productivity will have its repercussion on their earnings.

b. Falling productivity in the industry will be reducing the earnings of the enterprises as well. The system of sharing the proceeds of the catch leaves the enterprises in no better position during times of lagging productivity.

c. The processing sector, which depends so much on the catching branch for raw material (fish) will be seriously affected by the fall in productivity. The reduction in the supply of raw materials will lead to unemployment and excess capacity in the processing sector.[4]

d. The recurring fall in productivity will be adversely affecting our exports. The competitive position of our exports can be quickly eroded by the fall in productivity. The industry is now mainly depending on the favourable price in the international market.

e. Declining productivity in the industry will be leading to a rise in the unit cost of converting the natural resource, fishery, into fish products. This will add to inflationary pressures in the Indian Economy.

f. The continuous slack in productivity will lead to withdrawal of capital from the industry by many enterprises. This can cause general unemployment and depression in the industry.

g. Lagging productivity in the industry, if it is confined to any particular sector or region, will prompt the fishermen to migrate to the more paying sector or region. This will depress the earnings of the fishermen in the receiving sector or region thereby causing social disharmony in the affected areas.[5]

Factors behind the fall in productivity

It has already been pointed out that the fall in productivity is a

problem predominantly felt in Region II. Now it is imperative to find out the factors behind this fall in productivity. The general understanding is that declining productivity in the industry is associated with a steady rise in fishing effort.[6] The rationale of this assumption is that a constant addition to the fishing pressure of a region will after some time yield only a less than proportionate increase in output (fish). The outcome will be a diminution in the marginal productivity of effort. However, this need not be the case always in fishing, because the size of the fish stock available for catching is influenced by the free play of the natural environment, which will in its turn modify the operation of the Law of Diminishing Returns. The exact nature of this relationship as it operated in the State can be seen from the following table.

TABLE III

CPUE and Fishing Effort in the Fishing Regions of Kerala (1967-73)

	Region-I		Region-II	
Year	CPUE (in kg)	Effort in '000 manhours	CPUE (in kg.)	Effort in '000 (manhours)
1967	3.75	20343	12.44	23132
1968	3.09	19263	12.94	22069
1969	4.68	17246	11.31	19061
1970	4.84	13962	12.04	25123
1971	4.78	24499	13.60	24106
1972	3.72	33180	06.16	27916
1973	5.79	42770	07.34	27276

Source: CMFRI

The table shows two quite distinct patterns of relationship. They are (1) Fishing efforts seems to exert no direct influence on productivity in Region-I and (2), its influence is quite negative in Region-II. The table in fact shows a positive relation between productivity and fishing effort in Region-I. This is quite possible it account is taken of the qualitative changes that additional fishing effort might bring to the industry. The steady rise in fishing effort in Region-I must be the result of the intensification of fishing effort by existing units in the region as well as the entry of new units. Intensification of fishing effort by existing units would mean a redistribution of priorities and a reallocation of the entire resources of the units. This would *ceteris paribus* result in economies to the enterprises and a general improvement in their productivity. When new units enter the industry, they generally bring with them better techniques and more facilities which are conducive to higher productivity. The introduction of larger and more mechanized boats would certainly mean higher output and higher productivity. The economies of large scale production and the benefits of specialization are quite well-known to the industry. The over-all development of the industry would naturally bring many gains to the industry which are external to the enterprises. When these factors are taken into account, the steady rise in fishing effort in Region-I can certainly contribute to a rise in productivity. The rapid development of the industry particularly at places like Cochin and Neendakara (in Region-I) amply illustrates this aspect of development.

The declining trend in productivity in Region-II is yet to be explained. The table presents a negative relationship between productivity and fishing effort in this region, the former falling with a rise in the latter.[7] This confirms the earlier assumption of diminishing returns. This is quite possible. The Central Marine Fisheries Research Institute points out "in the traditional inshore fishing grounds (of this region), an increase in the fishing effort will not yield any increase in the catch of pelagic fishes particularly of oil sardine and mackerel"[8] (it should be noted in this context that oil sardines and mackerels constitute the two major species of fish, which contribute to the bulk of the catches and earnings of the fishermen in this region). This suggests nothing but that the present rate of exploitation of fisheries in this region is already close to the optimum or perhaps even above that. There is no necessity of going further to explain the fall in productivity in this region, because it is already clear from the above mentioned behaviour of CPUE (productivity), and effort. Now, at this stage, the possible means of improving productivity in the industry can be shortly spelled out.

The Way-out

The industry is left with two atlernatives. The first alternative is to develop the inshore and inland water fisheries of the state by culture and management. The second is to bring more resources under utilisation, or to say the

same thing, to go in for extensive (deep sea) fishing. As far as the second alternative is concerned we have enough of resources in the regions beyond the continental shelf. The National Commission on Agriculture points out:

The extensive resources beyond the continental shelf hold additional potential for increasing production from cenventional and non-conventional types of fisheries, comprising high sea tunas, deep sea fishes, oceanic cephalopods particularly squids and deep sea fishes. Besides, there is considerable potential for increasing production from the underexploited molluscan resources in the continental shelf, particularly the oysters, mussels and clams[9].

The rational exploitation of these resources would help the industry to recover from the present fall in productivity. What is required for the time being is the extension of our fishing activity on the deep sea with suitable modifications in our technology.

NOTES

(1) Balakrishna R., Measurement of Productivity in Indian Industry, Madras-1958 pp 2–3

(2) Extent and Boundary of the Fishing zones of Kerala

Region	Zone	Extent in KM.	Boundary (From South to North)
I	I	44	Kollemgode to Valiaveli
	II	40	Kochuthura to Chilakoor
	III	49	Poozhikara to Valiazheekal
	IV	70	Tharayilkadavu to Ottamassery
II	I	65	Vettakkal to Kathiyalam
	II	68	Attupuram to Ponnani
	III	72	Kootayi to Edakkadavu
	IV	104	Quilandy to Kadankot
		48	Thaikadapuram to Kunjathur
Kerala		560	Kollemgode to Kunjathur

Source: Central Marine Fisheries Research Institute, Cochin

(3) The observed difference in productivity between the two regions can be found to exist even after taking the quality (value) of the catch into account.

(4) The prevalence of excess capacity even upto 50 percent has been reported by the Indian Institute of Foreign Trade in their study: "*Survey of India's Export Potential of Marine products*" (1970)

(5) It should be pointed out in this context that a number of fishermen used to migrate to Region-II from Region-I during the fishing season to take advantage of the plentiful resources available in the former Region. It is also suggested that the reported clash between groups of fisher men at Cannanore and other places in Region-II was the result of the unwillingness on the part of Fishermen in those regions to share 'their' resources with the immigrant fishermen. Entry by new fishermen it is argued, would depress the earnings of the fishermen, in the short-run by raising the local catches and lowering the price of fish and in the long-run by reducing the catches through resources depletion.

(6) Bell and Kinoshita have, for instance, stipulated a negative relationship between aggregate fishing effort and labour productivity. The same relationship has been assumed by Schaefer and Pella in their studies. For further details see Bell and Kinoshita *'The Measurement and Analysis of labour Productivity changes in United States Fisheries'* National Marine Fisheries service, Washington, July 1971 p. 34.

(7) Zone No. I of this region may be an exception. This zone consists of the area off Cochin and adjacent places, where fishing is comparatively developed with good many facilities. Fishing activity is more stabilised in this zone with the help of mechanised boats which are capable of exploiting the inshore and offshore resources of the region. The CPUE is generally high and stable in this zone (see table II above)

(8) Silas, Dharmaraja and Rengarajan, *Exploited Marine Fishery Resources of India—A Synoptic survey with comments on* Potential Resources, CMFRI Bulletin No. 27 March 1976, p. 19.

(9) Government of India, *Report of the National commission on Agriculture*, Part VIII (Fisheries): Ministry of Agriculture and irrigation, New Delhi 1976. p. 171.

ACKNOWLEDGEMENT

I am grateful to Dr. A. N. P. Ummerkutty, Director State Institute of Languages, Trivandrum, for kind encouragements to work on the fisheries problem and to Dr. E. G. Silas, Director, Central Marine Fisheries Research Institute, Cochin, for kindly making available the data used in this study.

TRADE FAIRS AND EXHIBITIONS

As part of its promotional campaign, the Marine Products Export Development Authority organises direct participation in selected Food Fairs overseas. Representative samples of the wide range of Marine Products available for export from India, along with charts, graphs and photographs depicting the composition, direction and export trend of Indian marine products are displayed at the MPEDA pavilions in the international fairs and exhibitions.

Exporters of marine products are also associated with the Authority's direct participation programme. Brief reports on direct participation in Anuga Fair '77, Cologne, Roko 78 International Food Exhibition, Utrecht and Hoteres and Foodex Fair, Tokyo are given in the following pages.

ANUGA FAIR '77, COLOGNE

Anuga Fair is a specialised food fair, held once in two years at Cologne (Federal Republic of Germany). The Anuga Fair is considered to be one of the biggest Food Fairs and is legitimately called "World Food Market". Anuga 77 was held from 10th to 15th of September, 1977. President Walter Scheel of the Federal Republic of Germany opened the Fair at a colourful official ceremony on the 10th September. The products of 3861 organisations from 78 countries were exhibited in the 2,00,000 square metre Fair complex.

Visitors evincing interest in frozen marine products on display at the MPEDA stand in the Anuga Fair.

At the India Pavilion in Anuga Fair.

The India Pavilion in the Anuga Fair had a total floor area of 50 square metres, where a cross section of the wide range of Indian marine products in frozen and canned forms was displayed. A portion of the pavilion was also used by the Cashew Export Promotion Council for displaying Indian cashew. The Authority had made special arrangements for the storage and display of frozen marine products in deep-freeze display cabinets.

A large number of importers of seafood products from all parts of the world, particularly from the west, visited our stall and evinced keen interests in importing from India several items of marine products. More than a hundred trade enquiries from potential overseas buyers of seafoods were received at the pavilion.

Capt. K. M. Mathew, Assistant Director, represented the MPEDA in the Fair. Apart from the officer of the Authority, four seafood exporters from India were also present at the pavilion for negotiating on-the-spot business. They were: Mr. P. N. Sivasankaran Nair of Relish Foods, Mr. T. Francis of Mini Seafoods, Mr. Crispin Vincent of Kala Cartons Pvt. Ltd., and Mr. A. K. Sen of Calcutta Seafoods. The Authority engaged two lady interpreters in the pavilion; one Indian and the other from Germany. Mr. V. C. Khanna, Consul General of India in Frankfurt and Mrs. Roshini Edalji, Marketing Officer of the Consulate General were also present in the pavilion throughout the duration of the Fair. The officials and the trade members courteously attended to all the trade visitors.

The European Economic Community extended financial assistance to India for organising participation in Anuga '77.

ROKA 78

"Roka 78" International Food Exhibition was held at Utrecht from 13th to 17th of February, 1978. Roka Fair is a biennial event organised at Utrecht, an important commercial city in Holland, by the Royal Netherlands Industries Fair authorities. The venue of the Fair was the permanent fair complex at Utrecht set up at four halls, viz., Irenehal, Bernhardhal, Margiethal and Marijkehal. Roka Fair has been an essential part of the marketing mix for all manufacturers of food stuffs and beverages keen to have their share in the Netherlands market. Roka Fair is also a trade event of growing importance in Western Europe.

The India pavilion had a total area of 75 sq. metres. Exhibits from India were mainly seafood products. MPEDA as well as four seafood exporters sponsored by it, received financial assistance for participation from the Dutch Government Centre for Promotion of Imports from Developing Countries (CBI). Representative samples of all the major India seafood products were prominently displayed at the MPEDA stand. The exporter-participants had separate stands in the pavilion, where their brands of products were displayed and business negotiations undertaken. Separate deep-freeze display cabinets were also provided by the CBI for all the stands in the India pavilion.

Hundreds of buyers from all parts of Europe, especially from the EEC countries visited the pavilion and negotiated business. Apart from discussing business prospects with Indian exporters, a large number of trade enquiries was recorded at the MPEDA stand. Participation in Roka 78 has helped in further promotion of India's exports of marine products to the EEC markets.

Some of the participants at the India Pavilion in Roka 78

Indian participants in Roka 78. (From left) Mr. Ousep D. Attokaren, Secretary, MPEDA, Mrs. and Mr. H. Kumar of the Indian Embassy, The Hague, Mr. T. Thomas of Mini Seafoods, Mr. Abraham Jacob of Chemmeens (Regd.), Mr. P. G. Mohan of Anupama Seafoods and Mr. Rafiq Ismail Sait of Indo Marine Agencies (Kerala) Pvt. Ltd.

Mr. Ousep D. Attokaren, Secretary, MPEDA, was the Director of the India Pavilion in Roka '78. The Indian seafood exporters who attended the Fair were: Mr. Abraham Jacob of Chemmens (Regd.), Mr. P. G. Mohan of Anupama Seafoods Mr. T. Thomas of Mini Seafoods and Mr. Rafique Ismail Sait of Indo Marine Agencies (Kerala) Pvt. Ltd.

The Embassy of India, The Hague, actively associated with the MPEDA in organising direct participation in the Roka 78.

Indian seafood exporters, officials of the Embassy of India, Tokyo and representatives of the Japan Marine Products Importers Association at the MPEDA pavilion in Hoteres and Foodex Fair.

HOTERES AND FOODEX FAIR

Hoteres and Foodex Fair is an important trade fair conducted every year since 1973. During 1978, this fair was held in the Exhibition ground at the International Trade Centre, Harumi, Tokyo. Besides India, countries like, Brazil, Denmark, Netherlands, Norway, Poland, Sweden, Taiwan, Japan and Indonesia participated. India was represented by the Marine Products Export Development Authority, Cardamom Board and Tea Board. The MPEDA stall displayed as many as six brands of frozen shrimp, 10 species of frozen fish and cartons of almost all brands of Indian shrimp. The MPEDA had requested the Indian exporters well in advance of the Fair to have their annual visit to Japan to coincide with the Hoteres and Foodex Fair 1978. Accordingly, the following Indian exporters and Indian importers in Tokyo were also present at the MPEDA Pavilion at the Hoteres and Foodex Fair 1978:

1. Mr. R. D. Pusalkar, Chairman & Managing Director, New India Fisheries Ltd., Bombay.

2. Mr. U. Rama Rao, General Manager (Commercial), Konkan Fisheries Pvt. Ltd., Bombay.

3. Mr. P. O. Philip, Managing Partner, Relish Foods, Alleppey.

4. Dr. Krishna Soft, Polyplate India, Calcutta.

5. Mr. A. K. Sen, Calcutta Sea Foods, Calcutta.

6. Mr. T. Banerji, New Tokyo Seafoods, Tokyo.

7. Mr. S. Asad, Manager, Southern Seafoods, Tokyo.

8. Mr. Babu Abraham, General Manager, South Eastern Enterprises, Tokyo.

9. Mr. Anand B. Mehta, Director, Anand Canning Industries Pvt. Ltd., Tokyo.

In all, about 37,000 persons visited the Fair, of which an estimated 20,000 visited the MPEDA stall. The stall had engaged a local guide, proficient in English and Japanese, to explain the exhibits as well as to record trade enquiries, which were mostly made in Japanese language. 83 trade enquiries were received at our stall.

This was perhaps the best organised participation in a Fair in Japan

during the last several years. The MPEDA was represented by Dr. T. A. Mammen, Director. The Embassy of India, particularly Mr. M. M. K. Anand, First Secretary and the Commercial Wing did all the preparatory work in organising Indian participation. The Indian Ambassador visited the Stall and gave useful guidance and advice. He also associated with the other functions organised by the Authority in connection with the Exhibition.

The Indian participants met the Japanese importers at a Dinner-Reception hosted by the Indian side on 15th March and at a subsequent Dinner hosted by the Japan Marine Products Importers' Association. The opportunity provided by the MPEDA's participation in the Foodex Fair was also made use of to assess the behaviour of Japanese market and the prospects of improving exports of marine products, scope for joint ventures in the field of deep-sea fishing etc.

Mr. Eric Gonsalves, Indian Ambassador to Japan at the MPEDA Pavilion in Hoteres and Foodex Fair. Also seen in the picture are (from left) Mr. M. M. K. Anand, First Secretary, Embassy of India, Mr. Edmund Fernado, Minister for Fisheries, Tamilnadu, Mr. R. D. Pusalkar, Managing Director, New India Fisheries Ltd. and Dr. T. A. Mammen, Director, MPEDA.

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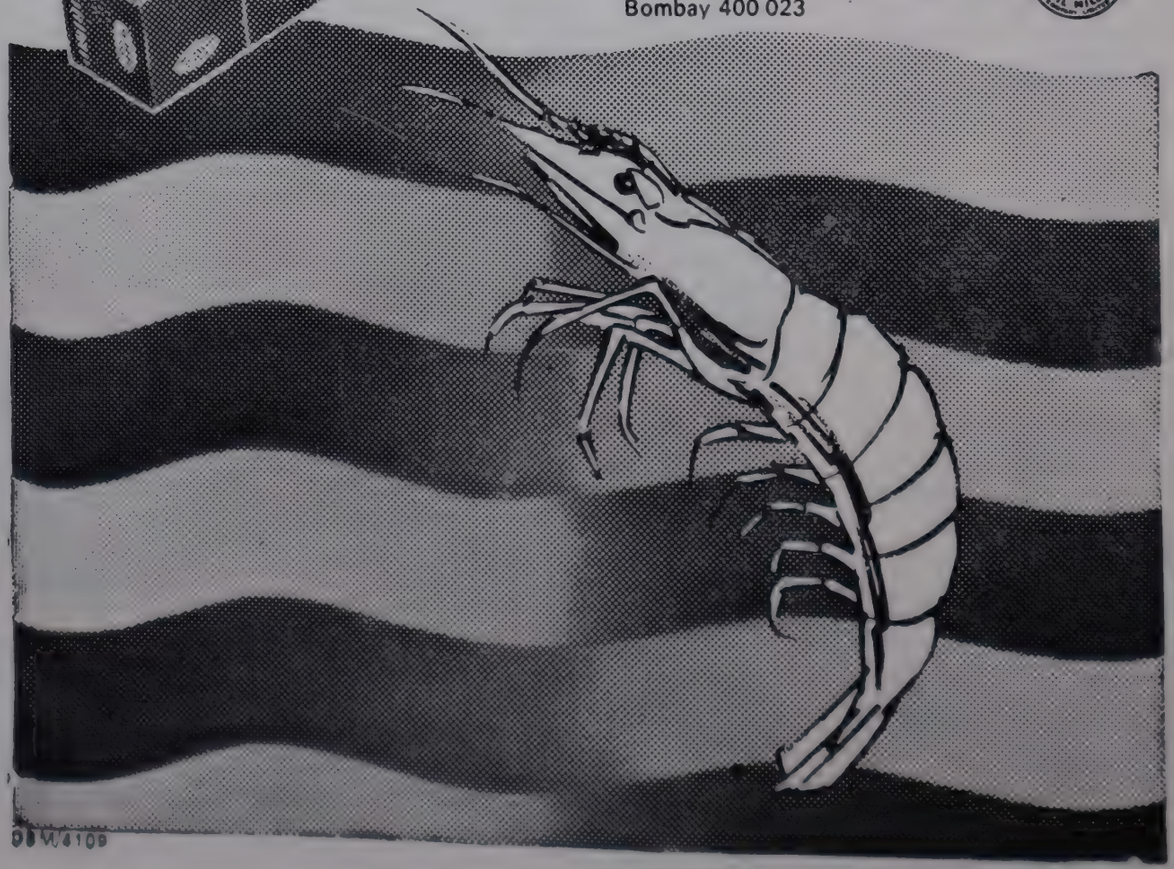

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COMMERCE MINISTER'S VISIT TO COCHIN

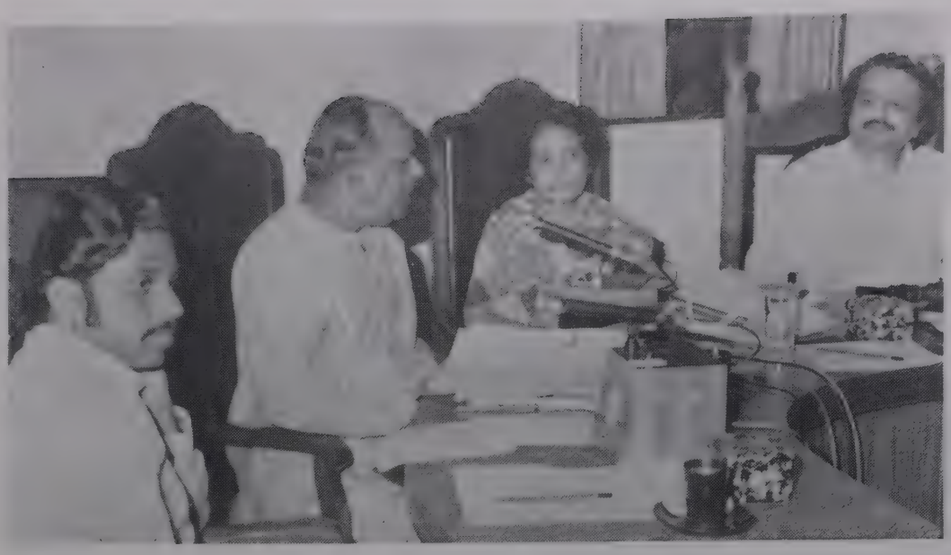
Commerce Minister's meeting with Chairman and other representatives of Export Promotion bodies.

Mr. Mohan Dharia, Union Minister of Commerce, Civil Supplies and Co-operation visited Cochin on 24th and 25th of March, 1978. A meeting of the heads of various export promotion bodies and other organisations based in Kerala under the Ministry of Commerce, was held at the Conference Room of the Marine Products Export Development Authority at 3 P. M. on the 24th, when the Commerce Minister discussed with them the problems of the respective export commodities.

New Building of the Seafood Exporters' Association Inaugurated

Inauguration of the new building of the Seafood Exporters' Association of India. Mr. Mohan Dharia is flanked by Mr. Baby John (right) and Mr. C. Cherian (left.)

The new building of the Seafood Exporters' Association of India was inaugurated by the Commerce Minister Mr. Mohan Dharia at 4.30 P. M. on 24th March, 1978 at a colourful function organised in the Willingdon Island, Cochin. The meeting was presided over by Mr. Baby John, Kerala Minister for Revenue and felicitations were made by Mr. A. K. Seshadri, Mayor of Cochin, Mr. S. Gopalan, I. A. S., Chairman, MPEDA and Mr. S. G. Sundaram I. A. S., Chairman, Cardamom Board, who was formerly holding additional charge as Chairman of the MPEDA. Mr. C. Cherian, President of the Seafood Exporters' Association of India, welcomed the distinguished gathering and Mr. Ambrose Fernando, veteran dried fish exporter proposed vote of thanks.



Mr. S. Gopalan, Chairman, MPEDA, Mr. K. J. Herschel MLA, Mrs. S. L. Singla, Joint Secretary, Ministry of Agriculture and Mr. V. C. Pande, Joint Secretary, Ministry of Commerce at the meeting on conservation of shrimp resources.

MEETING ON CONSERVATION AND MANAGEMENT OF SHRIMP RESOURCES

Professor P. C. George, Joint Commissioner (Fisheries) to the Government of India, addressing the meeting.

A meeting was held at Cochin on 5th May under the Chairmanship of Mr. V. C. Pande, Joint Secretary, Ministry of Commerce to ascertain whether a problem of conservation exists with regard to shrimp resources and if so to evolve a proper strategy for management of shrimp resources. The meeting was attended by representatives of Ministry of Agriculture, the Kerala Government, the Akhila Kerala Dheevara Sabha, the Seafood Exporters' Association of India, the University of Cochin, the Central Marine Fisheries Research Institute, the Central Institute of Fisheries Technology, the Integrated Fisheries Project, Pelagic Fisheries Project and the Marine Products Export Development Authority. The participants were generally agreed that there is a need for conservation and management of shrimp resources. A strategy has to be evolved taking into account interests of the various sectors involved and particularly the welfare of the fishermen community.

The meeting has enabled the representatives of the Ministries of Commerce and Agriculture to have a fuller appreciation of the extent of the problem. In this context the possibility of reducing the fishing efforts in the backwater areas and re-habilitating the affected fishermen by trade oriented schemes such as shrimp farming was also discussed. The meeting also recommended the strengthening of extension services for the proper and timely dissemination of research findings.

Mr. V. C. Pande, while summing up the day's discussion observed that the meeting served to guage the gravity of the problem of depletion of shrimp fishery in the Cochin area and that it would require conservation measures. He felt that before adoption of proper conservation measures there was need for removing the atmosphere of distrust. He re-

Mr. C. Cherian, President, Seafood Exporters' Association of India, speaking at the meeting on conservation of shrimp resources.

commended strengthening of extension services to convince the fishermen about the need for adopting proper measures for conserving the shrimp resources. In this context he mentioned that on matters like this it would not be fair to expect research conclusions of the perfection of judicial pronouncements. Further, he cautioned that the implementation of conservation measures should not be unduly delayed as it might take the fishery to a point of no return, as it happened in the case of desert expansion in Jodhpur area. He felt that fishermen affected could be rehabilitated on shrimp farming or given compensation for their loss of fishing.

STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS ABOUT THE NEWSPAPER 'INDIAN SEAFOODS'

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I, Ousep D. Attokaren, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Cochin – 682 016

Date: 31—12—1977.

(Sd.) OUSEP D. ATTOKAREN

Publisher

NEWS & NOTES

Third Indian Seafood Trade Fair to be held at Bombay in February 1979

The Marine Products Export Development Authority in association with the Seafood Exporters' Association of India and the Taj Group of Hotels, will be organising the Third Indian Seafood Trade Fair at Bombay on 9th, 10th and 11th of February 1979. The venue of the Fair is Hotel President.

The First Indian Seafood Trade Fair was organised at the Taj Mahal Inter-continental Hotel, Bombay, in November, 1973, and the Second Indian Seafood Trade Fair at the Taj Coromandal Hotel, Madras, in February, 1976. Both the Fairs attracted a very large number of participants from India as well as from all major seafood importing countries the world over. The Fair brought together exporters, buyers and representatives of allied and ancillary industries under one roof. It also provided a forum to make a correct appreciation and understanding of the present status of the seafood industry in India, and its potential to cater to the diversified needs of the buyers abroad. From the response already received by the organisers, it is expected that the Third Indian Seafood Trade Fair will attract an overwhelmingly larger number of participants from India and overseas.

The fair is organised with a view to:

i) enabling overseas buyers to meet the leading Indian seafood exporters and packers and explore new avenues of business;

ii) displaying the new range of products available from the Indian seas;

iii) giving overseas companies an opportunity to meet Indian sea food processors and machinery manufacturers and discuss possible areas of collaboration;

(iv) exploring possibilities of joint ventures;

v) exchanging views with government officials, quality control agencies and financial institutions and

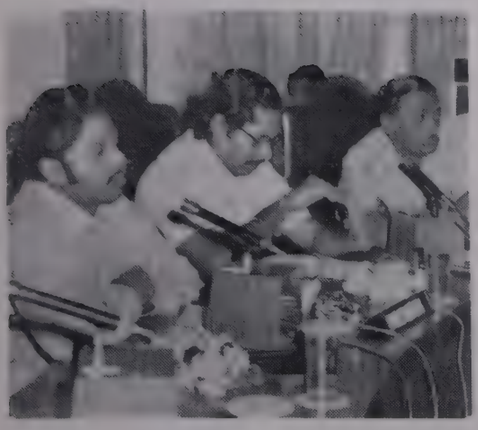
vi) stimulating interest in the diversified range of Indian marine products.

Seafood industrialists from Japan, USA, Australia, France, U. K., Belgium, Netherlands, Federal Republic of Germany, Spain, Thailand, Hong Kong, West Asian countries etc. are expected to attend the forthcoming Fair at Bombay. All the major Indian exporters, processors and packaging specialists will also participate in the Fair. A series of Seminars, meetings and visits to processing plants and fishing harbours will be organised. Delegate's registration fee is US $ 150/- (Plus US$ 50/- for accompanying spouse). The registration fee includes US$ 50/- as advance for Hotel charges, to be adjusted in the final bill.

The delegates will be provided accommodation at Hotel President, Bombay and will be entitled to admission to the Fair, cultural programmes, seafood banquets, business sessions etc. organised in connection with the Fair. For detailed information and Registration Forms please write to the Marine Products Export Development Authority, Cochin-682 016; the Sea food Exporters' Association of India, Cochin-682 003 or the Hotel President, Bombay-400 005.

Summer Institute on Fish Processing Technology at CIFT

The Indian Council of Agricultural Research (ICAR) sponsored a month long Summer Institute on Fish Processing Technology at the Central Institute of Fisheries Technology (CIFT), Cochin.



Mr. S. Gopalan, Chairman, MPEDA, addressing participants in the Summer Institute at CIFT

This summer Institute, the first of its kind designed and conducted by the CIFT in the fish processing fields, was one of the 22 Summer Institutes proposed to be conducted by the ICAR on various branches of agriculture this year. The Summer Institute at Cochin was inaugurated on 1st May, 1978.

Twenty participants including representatives from Fishery departments of Kerala, Tamilnadu and Gujarath, Andhra Pradesh Fisheries Development Corporation, Agricultural Universities of Karnataka, Avinashilingam Home Science College for Women, BRD Post-graduate College, Deonia (M P), Marine Products Export Development Authority, Central Institute of Fisheries Education, Bombay, Integrated Fisheries Project, Cochin and CIFT attended the Summer Institute.

Mr. S. Gopalan, Chairman, Marine Products Export Development Authority (MPEDA), presided over the valedictory function held on May, 31 and distributed certificates to the participants.

Seafood Exporters win Awards for outstanding export performance

Three exporters of marine products are among the 52 exporters selected by the Government of India for National Awards for Outstanding Export Performance during 1976-77. Of these, M/s. Orient Marine Products Pvt. Ltd., Madras, and M/s. Prasanth Overseas Supplies House Pvt. Ltd., Madras, are among the 16 Trophy winners, while M/s. Southern Seafoods Ltd., Madras, are among the 36 organisations who have been awarded Certificates of Merit. The President of India distributed the Awards at an investiture ceremony in Delhi on 8th June, 1978. These National Awards have been instituted by the Ministry of Commerce as an annual event for the outstanding contributions in the field of exports.

MPEDA Introduces Refrigerated Trucks

The MPEDA proposes to put into operation a fleet of refrigerated trucks for the transport of frozen seafoods from the processing plants to the frozen storages and to the wharf for shipment. The trucks are also to be engaged for interstate transport to take advantage of specific reefer sailings which are often irregular in service. The need for such facilities has been increasingly felt as many of the shipping lines are now insisting that the frozen products should not have a temperature higher than — 12°C at the time of loading and experience has indicated that the absence of these facilities adversely affects the quality of the final product.

The provision of six refrigerated trucks which has already been ordered for is the first phase of an operation of a net work of transportation and storage facilities. The plan envisages utilising refrigerated trucks and reefer barges in conjunction with the frozen storages being built up by the MPEDA at major seafood producing and exporting centres in India.

Fishing Harbour at Visakhapattanam Inaugurated

The first fishing harbour in India was inaugurated at Visakhapattanam on 8th April 1978. This fishing harbour is constructed on the eastern side of the Visakhapattanam outer harbour and is designed to accommodate 15 large vessels and 150 mechanised boats. Long before the inauguration of the harbour, fishing vessels and mechanised boats have started operating and at present, almost double the designed number of vessels and boats are operating from Visakhapattanam The fishing harbour has a protected entrance and maintain tranquility for the safe landing and berthing of fishing vessels. The harbour has a long auction hall, a slip way, which can take vessels of 120′ length, provision to the supply of ice, water and fuel directly into the boat and areas ear-marked for fish based industries.

The second stage of Visakhapattanam fishing harbour and development of fishing harbours in Kakinada and Nizamapattanam would be taken up soon with the financial assistance from World Bank.

India 16th on the World Shipping Map

India climbed one step on the world shipping ladder in 1976-77, moving from the 17th rank to the 16th among world ship owning countries. The Indian fleet's gross tonnage now totals 5.48 million.

The year 1976-77 also saw the percentage of Indian tonnage to world trade improve to 1.39 from 1.37 per cent on the Lloyd's Register of Shipping Records. The Lloyd's Register lists vessels of 100 GRT and over.

The Indian merchant fleet (only 150 GRT and over) expanded by a gross addition of 23 vessels of 298,404 GRT during 1977 and as on January 1, 1978 it stood at 5.35 million GRT with 371 vessels, against 5.11 million GRT with 359 vessels a year ago.

Safcol in Malaysian Joint Venture

The South Australian Fishermen's Co-operative Limited, has entered a major joint fish and seafood processing and canning venture with a Malaysian company.

The project includes the construction of an A$ 200,000 cannery in Penang as an addition to the existing frozen fish operations of Malaysian Sea Products Pty. Ltd.

Although SAFCOL will hold a minority interest in the venture, it will have a contract giving it total management and marketing responsibility.

A senior executive of SAFCOL will be manager of the new company which will be called MSP-Safcol and will develop markets in America and Europe.

Equipment for the new plant will be supplied from Australia, the United States and Malaysia.

ADB plan to boost Fishing Industry in Papua, New Guinea

The Asian Development Bank is to provide technical assistance on a grant basis to Papua,New Guinea for the formulation of a viable fisheries development project for possible financing by the bank.

Under the technical assistance, six experts will evaluate the status of existing fisheries operations, assess their potential, and determine the institutional framework most suitable for long-term expansion of the sector.

The project to be formulated aims at promoting expanded fish and pearl production in order to generate increased income and employment opportunities in the fishery sector.

The main components of the project are expected to include shore facilities for the skipjack fleets, pole and line fishing boats, fish collection facilities for the artisanal fisheries sector, pearl culture expansion and consultant services.

Kerala plans to boost Fish Farming

Kerala is planning a big boost to fresh-water fish farming in lagoons, rivers, ponds and wells. A cabinet sub-committee has been constituted by the State Government to supervise the inland water fishery development plans. The departments of Revenue, Local bodies, Civil Supplies and Agriculture will work in co-operation to implement the plans.

The experimental breeding of the West Bengal "tiger" prawns in Kerala is expected to unearth the export possibility of fresh-water prawns.

India and Poland agree on Convertible Currency trade

As a result of talks recently held between the two countries on trade and payments; India and Poland have agreed to end rupee trade from January 1, 1981 and switch to convertible currency trade thereafter. The two delegations have agreed on an interim form of trade and payment for the three years, 1978 to 1980. Under the new three-year agreement, payments of commercial and non-commercial transactions will continue to be in rupee.

A formal agreement covering the period 1978–80 has been signed. Meanwhile the two Governments will take any advance action necessary to facilitate the flow of trade in consonance with these decisions. Exports and imports for 1978 will be carried out in accordance with the commodity lists being worked out separately. The detailed lists will also be negotiated and finalised along with the formal trade and payments arrangement.

USSR Catch may top Japan

The Russian catch is remarkable as much for its variety as for its volume. More than 150 species of fish, crustaceans and molluscs made up the record haul in 1976 of 10,133,670 tons.

Second only to Japan among fishing nations, the USSR may have been less affected by the restriction on distant water fishing through 200-mile limits. She may therefore have moved into top place in 1977, according to a report appearing in the Fishing News International, London.

In their ocean-ranging operations her ships take great quantities of the most abundant species. A modern trawler can land 10,000 tons a year. And Russia deploys a fleet that includes some 750 stern trawlers larger than 2,000 gross tons.

During 1976, these trawlers plus the big factory vessels and hundreds of smaller ships had catches which included two million tons of Alaska pollack, nearly 300,000 tons of Cape hake, 420,000 tons of Atlantic redfish, 467,000 tons of Atlantic cod.

Fall in world Fish Meal output

World production of fish meal fell just below four million tons in 1977 when the total was estimated at 3,985,000 tons. This was a drop of 9.5 per cent on the 4.4m. tons of 1976, and was the lowest total since 3.65 m. tons in 1973.

Main cause of the decline was the slump in Peruvian production to only about 440,000 tons. This was a little over half that of 1976.

Meal production in Europe was up by more than 55 per cent to a total of 1,240,000 tons. Among the main producers, Norway's output rose to 475,000 tons and that of Iceland exceeded 150,000 tons. But Danish pro-

duction dropped from 349,000 to 325,000 tons.

In North America, Maxico doubled her production to 80,000 tons.

Group Marketing Organisation being set up in Canada

Fish exporting companies in Canada have been setting up a new organisation which will help them find and develop overseas markets. According to the Fisheries Council of Canada, the new body will be known as the Canadian Association of Fish Exporters (CAFE). CAFE, which would be a sister organisation of the Fisheries Council, is expected to supply the Canadian companies with a steady flow of information on international fish markets and prices.

At the same time the Canadian Trade Department is considering a proposal to appoint people from the fishing industry as Attaches in major overseas markets. To begin with, Fish Attaches will be appointed in Japan and some European countries.

At present, Commercial Attaches in 40 countries are responsible for this job. But after the 200-mile limit came the Canadian Government appointed fisheries representatives in several countries.

Jute Reinforced Plastic boats

Will fishing boat hulls be a new outlet for India's production of jute?

Working with the UN Development Programme, the Government Department of Science and Technology is engaged in a project for the manufacture of jute fibre polyster.

Six national research institutes are associated in the project, and fishing boats are among the many possible applications being considered.

Researcher in the project believe that not only jute but other natural fibres plentiful in India could be used for the purpose. Production techniques are said to be simple, requiring only labour.

Jute is used in the form of woven cloth and yarn. When wetted with polyster resin and cured, the resulting material is light, stiff and strong. It is said to be not affected by moisture or heat, and its chemical composition makes it fireproof.

According to the Department, a small boat able to carry a ton of fish could be made of jute reinforced plastic for only Rs. 2,000 (about £ 110) and would last 15 to 20 years.

Fishing Boat prices double in Norway

The price of fishing boats has doubled since 1970, according to figures published by the Central Statistical Office in Oslo (Norway).

For vessels over 100 gross tons, the price index in 1976 had reached 192.5, from a 1970 base of 100. There were further increases in 1977. For boats under 100 tons, the index reached 172.7.

India to open Trade Centre at Baghdad

India and Iraq have agreed to open trade centres in each other's country as a measure to increase and diversify economic relations between themselves. This decision was taken recently in New Delhi by Mr. Mohan Dharia, Union Minister of Commerce, Civil Supplies and Co-operation and Mr. Ghanim Abdul Jalil, Co-Chairman of the Indo-Iraq Joint Commission.

Mr. Ghanim Abdul Jalil suggested that the opening of an Indian trade centre in Iraq would not only popularise Indian products to the Iraqi people but also increase India's export earnings and diversify economic relations between the two countries. He pointed out that similar trade centres of other friendly countries had already been set up in Iraq.

India welcomed the suggestion and decided to open such trade centre in Baghdad and directed the State Trading Corporation to take immediate steps in that direction in collaboration with the Iraqi authorities. Iraq will also acquire reciprocal rights to open a trade centre in India.

The two Ministers also agreed to organise trade exhibitions in each other's country and take other steps to promote trade. India's Commerce Minister urged upon the Iraqi Minister to increase the intake of various Indian items.

India-Japan Trade review

Bilateral trade between India and Japan which is running in favour of India was reviewed at a two-day meeting held in Tokyo on 14th and 15th of June, 1978. The Indian delegation led by Mr. R. D. Thapar, the then Commerce Secretary, included Mrs. Anna Malhotra, Additional Secretary, Ministry of Agriculture & Irrigation and Mr. A. Coutto, Joint Secretary, Ministry of Industry. The two sides considered the possibilities of greater co-operation in the fields of agriculture and fisheries including deep sea fishing. Marine Products rank second among the items exported from India to Japan, the first being iron ore.

Good scope for Indo-Japanese joint ventures in S. E. ASIA

There is good scope for India and Japan co-operating with each other in setting up joint ventures in South-East Asian and West Asian countries. Japan can also provide sub-contracts

to Indian parties for major projects in the South-East Asian countries instead of competing with each other.

These are some of the major conclusions arrived at the two-day joint meeting of India and Japan Committees for studies on economic development which concluded in New Delhi recently.

The two sides also took note of the favourable surpluses available in both the countries for liberalising imports and felt that there was scope for enlarging the trade between the two countries. The Japanese side felt that in addition to iron ore and marine products, Japan could also buy manufactured goods from India provided prices were competitive.

In the context of the importance given to agriculture in India's new Five-Year Plan, it was pointed out that Japan could also assist in improving agricultural and fisheries production in India.

The recommendations of the Joint Committee would be submitted to the respective Governments, which in turn, would be requested to set up Joint Committees to study the scope for co-operation in detail.

India re-elected to FAO council

India has been re-elected to the FAO Council for a three-year term beginning January, 1979.

The election for the seats falling vacant for the terms ending in November, 1977 and December, 1978 was held at the recent session of the FAO Conference held at Rome. India is the member of the Council right from its inception in 1947. Its present membership is to expire in December, 1978.

The FAO Council, consisting of 42 members, is the executive body of the Food and Agriculture Organisation of the United Nations.

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